



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER OF PATENTS AND TRADEMARKS  
Washington, D.C. 20231  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/669,390	09/26/2000	Daniel G. Stearns	IL-10703	3385

7590

04/03/2003

Alan H Thompson  
Assistant Laboratory Counsel  
Lawrence Livermore National Laboratory  
P O Box 808 L-703  
Livermore, CA 94551

EXAMINER

ROSASCO, STEPHEN D

ART UNIT	PAPER NUMBER
----------	--------------

1756

DATE MAILED: 04/03/2003

6

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/669,390

Applicant(s)

STEARNS ET AL.

Examiner

Stephen Rosasco

Art Unit

1756

-- The MAILING DATE of this communication appears on the cover sheet with the corresponding address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 28 February 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-39 is/are pending in the application.
- 4a) Of the above claim(s) 22-39 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-21 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 9/26/00 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 4.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

### Detailed Action

Applicant's election without traverse of Group I in Paper No. 5 is acknowledged.

The disclosure is objected to because of the following informalities: in claim 12, line 2, "particle or seek", "seek" is unclear.

Appropriate correction is required.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tong et al. (6,352,803) in view of Grenon et al. (6,165,649).

The claimed invention is directed to a method for mitigating multilayer defects on a reticle for use in an EUVL system comprising taking a reticle which includes a substrate with a thin film coating that has a defect, and then changing the thickness of the thin film coating in the vicinity of the defect.

Tong et al. teach a process for fabricating an EUVL mask substrate for containing at least a multilayer structure on the front side of a substrate, the improvement comprising:

forming the substrate of low thermal expansion material, forming a layer of material intermediate the substrate and the multilayer structure to enhance defect inspection, improve surface finishing, reduce defect levels, and correct stress imbalance,

said layer of material being selected from the group consisting of silicon, molybdenum, chromium, chromium oxynitride, TaSi, and Mo/Si multilayers, and

forming at least one layer of material on the backside of the substrate to facilitate at least one of the group of electrostatic chucking, enhance defect inspection and correct for bowing of the substrate caused by stress imbalance.

The teachings of Tong et al. differ from those of the applicant in that the applicant teaches correcting the defect by changing the thickness of the thin film coating in the vicinity of the defect.

Grenon et al. teach a method of repairing a mask, the method comprising the steps of:

(a) providing a mask having a defect;  
(b) shining a beam on said mask to remove a thin portion of said defect, the defect being a thin layer extending approximately parallel to said approximately planar surface.

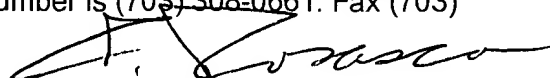
(c) providing a second removal step to remove remaining portions of said defect.

And wherein said shining step (b) comprises the step of shining a focused ion beam, which is shined in patterns on said defect to provide said thin portion of said defect taking into account variation in thickness of said defect.

It would have been obvious to one having ordinary skill in the art to take the teachings of Tong et al and combine them with the teachings of Grenon et al. in order to make the claimed invention because the method of removal of Grenon et al. is a standard method for improving the surface finishing as is taught by Tong et al.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to S. Rosasco whose telephone number is (703) 308-4402.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (703) 308-0661. Fax (703) 305-3599.



S. Rosasco  
Primary Examiner  
Art Unit 1756